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(54) **Mixing and applying plasters**

Mischen und Anbringen von Pflastern

Mélange et application de plâtre

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FR-A- 2 157 621 **FR-A- 2 545 002**

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Description

[0001] The present invention relates to a plaster sprayer for applying dry premixed plasters (see f.i. EP-A-0 003 508).

[0002] Conventional plaster sprayers are usually associated at trolleys for moving them and are constituted by a loading hopper where the dry premixed plaster is introduced.

[0003] The hopper allows to introduce the plaster at a chamber for mixing it with water; said chamber is connected to means for pumping the mix which are constituted by a tube-and-auger assembly that is directly actuated by the mixer contained in the mixing chamber.

[0004] The tube-and-auger assembly is usually fixed to the mixing chamber by means of appropriate bolts and nuts.

[0005] The drawback observed in conventional plaster sprayers and generally in all mortar pumping devices that use a tube-and-auger assembly consists of the fact that, to achieve optimum pumping of the mixed product, it is periodically necessary to replace the tube and the auger due to the abrasive nature of the products that are used.

[0006] The tube and the auger are currently replaced manually, and this is a very complicated operation that entails risks for the operators assigned thereto.

[0007] This replacement can be performed for example by unscrewing the nuts that lock the tube-and-auger assembly to the mixing chamber and placing said assembly on a bench fitted with a vise; however, such a bench is not always available in a building yard, where the plaster sprayer is used, and in any case the tube must be locked in the vise, consequently jamming the auger inside it.

[0008] This makes it very difficult to extract the auger; this operation must be performed by at least two people by using, for example, a blade which is placed on the head of the auger to make it rotate and thus achieve its extraction.

[0009] It is thus necessary to perform a considerable effort, with possible physical risk for the operators due to the precarious placement of the blade on the head of the auger.

[0010] The reverse operation must be performed to reposition the new auger inside the tube or in any case to replace the tube while using the old auger.

[0011] As an alternative, replacement can be performed by using a hydraulic extractor: however, even this solution has drawbacks, since on one hand a hydraulic press is not always available and on the other hand it is possible to damage the tube while coupling the auger to the tube, since the auger is inserted by moving the auger axially rather than rotating it.

[0012] The aim of the present invention is to solve the described technical problems, eliminating the drawbacks of the prior art, and thus providing a plaster

sprayer in which it is possible to quickly and easily replace the tube and/or the auger.

[0013] Within the scope of the above aim, an important object is to provide a plaster sprayer in which this replacement can be performed by a single operator.

[0014] Another object is to provide a plaster sprayer in which replacement can be performed in conditions that ensure maximum operator safety.

[0015] Another object is to provide a plaster sprayer in which the tube or the auger are replaced without damaging the tube in any way.

[0016] Another object is to provide a plaster sprayer in which the auger and the tube can mutually disengage and engage without any effort on the part of the operator.

[0017] Another object is to provide a plaster sprayer in which reassembly of the auger in the tube automatically entails the centering of said tube as well.

[0018] Another object is to provide a plaster sprayer which is structurally very simple and has low manufacturing costs.

[0019] This aim, these objects, and others which will become apparent hereinafter are achieved by a plaster sprayer for applying dry premixed plasters, which comprises a motorized mixer which is contained within a chamber for mixing with water and drives mixture pumping means that are constituted by a tube-and-auger assembly, characterized in that it comprises a jaw for temporarily locking said tube-and-auger assembly, said jaw being slidably associated with fixed guiding means and interacting with a removable locking flange.

[0020] Further characteristics and advantages of the invention will become apparent from the detailed description of a particular embodiment, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a schematic side view of the plaster sprayer during operation;

figure 2 is a view, similar to the preceding one, of the arrangement of the mixing chamber prior to the replacement of the tube or of the auger;

figure 3 is a lateral view of the mixer of the sprayer according to the present invention;

figure 4 is a lateral view of the auger of the sprayer according to the present invention;

figure 5 is a sectional view of the tube of the sprayer according to the present invention;

figure 6 is a partially sectional view of the arrangement of the jaw and of the tube-and-auger assembly with respect to the mixing chamber, the locking flange being omitted for the sake of clarity;

figure 7 is a sectional view, taken along the plane VII-VII of figure 6;

figure 8 is a view of the locking flange;

figure 9 is a schematic view of the arrangement of the mixer, of the mixing chamber, and of the tube-and-auger assembly.

[0021] With reference to the above figures, the reference numeral 1 designates the plaster sprayer, which is mounted on an appropriate trolley 2 and comprises a hopper 3 for loading dry premixed plasters; a mixing chamber 4 is pivoted to said hopper 3 and internally contains a mixer 5 that is driven by means of an adapted gearmotor 6.

[0022] Inside the mixing chamber 4, the dry premixed plaster is mixed with water and then sent to pumping means which are driven by the mixer 5 and are constituted by an assembly which is composed of an auger 7 that is associated at a complementarily shaped seat formed in a tube 8.

[0023] The auger 7 has a head 9 on which an adapted slit 10 is formed; a complementarily shaped ridge 11 which protrudes below the mixer 5 can be arranged at said slit 10.

[0024] The assembly constituted by the auger 7 and by the tube 8 can be locked within an adapted jaw 12 which can be tightened by means of a single bolt 13, since said jaw 12 merely has the purpose of supporting and slightly locking the tube-and-auger assembly.

[0025] Two pairs of C-shaped profiled elements 14a and 14b protrude radially on a diametrical plane from the jaw 12 and constitute means which allow the jaw 12 to slide with respect to fixed guiding means which are constituted by a pair of tie rods 15a and 15b which are detachably associated, at one end, below the mixing chamber 4.

[0026] Said tie rods 15a and 15b accordingly run parallel to the axis of the auger 7 and of the tube 8 and interact, at the end that does not interact with the mixing chamber 4, with a flange 16 to lock the auger-and-tube unit, which can be arranged adjacent to the mixing chamber 4; the arrangement of said flange is such as to allow the interaction of the ridge 11 and of the mixer 5 at the slit 10 formed on the head 9 of the auger 7.

[0027] The locking of the flange 16 is temporary, in that it can be provided by means of adapted removable bolts.

[0028] The use of the plaster sprayer according to the invention is thus as follows: when it is necessary to replace the auger 7 or the tube 8, an operator must first of all place the mixing chamber 4 as shown in figure 2, i.e. to tilt it at angle of substantially 90°, in order to easily remove the flange 16 from the pair of tie rods 15a and 15b.

[0029] In this way the jaw 12 can slide, by virtue of the profiled elements 14a and 14b, along said tie rods 15a and 15b when the mixer 5 is turned.

[0030] By keeping the ridge 11 of said mixer within the slit 10 of the head 9 and by pressing an appropriately provided pushbutton located on the machine for producing a rotation that is limited to the mixer 5, the auger 7 is rotated, consequently extracting it from the tube 8, which is in any case supported by the pair of tie rods.

[0031] It is thus possible to mutually disengage the

auger 7 and the tube in a few seconds; after replacing either or both, they are mutually reengaged by first manually positioning the auger 7 on the tube and then rotating the mixer 5 in the opposite direction by operating an appropriately provided pushbutton to activate the gearmotor 6 in reverse.

[0032] Once the auger and the tube have been mutually reconnected, it is sufficient to reposition the flange 16, locking the jaw 12 so that the rotation of the mixer 5 entails the rotation of the auger 7 without causing extraction from the tube 8, which is locked to said flange 16.

[0033] It has thus been observed that the plaster sprayer according to the invention has achieved the intended aim and objects, since it is possible even for a single operator to rapidly and easily replace the auger and/or the tube with no risk to the operator.

[0034] It is also stressed that this solution allows to self-center the tube.

[0035] The described solution can be applied also to conventional plaster sprayers by means of simple modifications and can thus find widespread application.

[0036] The materials and the dimensions of the individual components of the device may of course be the most pertinent according to the specific requirements.

[0037] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. Plaster sprayer for applying dry premixed plasters, comprising a motorized mixer which is contained within a chamber for mixing with water and drives mixture pumping means that are constituted by a tube-and-auger assembly (7,8), characterized in that it comprises a jaw (12) for temporarily locking said tube-and-auger assembly (7,8), said jaw (12) being slidably associated with fixed guiding means (15a,15b) and interacting with a removable locking flange (16).
2. Sprayer according to claim 1, characterized in that it comprises an auger (7) which has a head (9) on which an adapted slit (10) is formed, a complementarily shaped ridge (11) that protrudes below said mixer (5) being arrangeable at said slit (10), said assembly being constituted by said auger (7) and said tube (8) being lockable temporarily within an adapted jaw (12) which can be tightened by means of a single bolt (13), two pairs of C-shaped profiled elements (14a,14b) protruding radially with respect to said jaw (12) along a diametrical plane and con-

stituting means that allow said jaw (12) to slide with respect to said fixed guiding means (15a,15b).

3. Sprayer according to claims 1 and 2, characterized in that said fixed guiding means are constituted by at least two tie rods (15a,15b) which are detachably associated, at one end, below said mixing chamber (4). 5
4. Sprayer according to claims 1 and 3, characterized in that said at least two tie rods (15a,15b) run parallel to the axis of said auger (7) and said tube (8) and interact, at the end that is not connected to said mixing chamber (4), with a detachable flange (16) that allows to lock said auger-and-tube assembly (7,8) adjacent to said mixing chamber (4). 10 15
5. Sprayer according to claims 1 and 4, characterized in that the position of said flange (16) is such as to allow the interaction of said ridge (11) of said mixer (5) at said slit (10) formed on said head (9) of said auger (7). 20
6. Sprayer according to one or more of the preceding claims, characterized in that the removal of said flange (16) and the activation of said mixer (5) allow to extract or insert said auger (7) with respect to said tube (8), said tube (8) being able to slide along said pair of tie rods (15a,15b) by means of said profiled elements (14a,14b) that prevent its rotation. 25 30

Patentansprüche

1. Gips-spritzapparat zur Auftragung trocken vorge-mischter Gipse, welcher einen motorgetriebenen Mischer umfaßt, der innerhalb einer Kammer zur Mischung mit Wasser enthalten ist und eine Misch-pumpe antreibt, welche von einer Rohr-Stangen-bohrer-Baueinheit (7, 8) gebildet ist, **dadurch gekennzeichnet**, daß er eine Klemmbacke (12) umfaßt zum zeitweiligen Festklemmen der Rohr-Stangenbohrer-Baueinheit (7, 8), wobei die Klamm-backe (12) verschiebbar feststehenden Führungen (15a, 15b) zugeordnet ist und mit einem abnehmbaren Klemmflansch (16) zusammenwirkt. 35 40 45
2. Gips-spritzapparat nach Anspruch 1, **dadurch gekennzeichnet**, daß er umfaßt einen Stangen-bohrer (7), welcher einen Kopf (9) aufweist, auf dem ein angepaßter Schlitz (10) angeformt ist, einen komplementär geformten Steg (11), welcher unterhalb des Mixers (5) hervorsteht und an dem Schlitz (10) anbringbar ist, die Baueinheit, welche durch den Stangenbohrer (7) und das Rohr (8) gebildet ist zeitweilig in einer angepaßten Klemm-backe (12), welche durch einen einzigen Bolzen (13) festgespannt werden kann, einklemmbar ist, zwei C-förmige Profilelemente (14a, 14b) radial 50 55

bezüglich der Klemmbacke (12) entlang einer dia-metralen Ebene hervorstehen und Mittel bilden, welche es der Klemmbacke (12) ermöglichen, bezüglich der feststehenden Führungen (15a, 15b) zu gleiten.

3. Gips-spritzapparat nach den Ansprüchen 1 und 2, **dadurch gekennzeichnet**, daß die feststehenden Führungen durch mindestens zwei Führungsstan-gen (15a, 15b) gebildet sind, welche an einem Ende, unterhalb der Mischkammer (4), lösbar zuge-ordnet sind.
4. Gips-spritzapparat nach den Ansprüchen 1 und 3, **dadurch gekennzeichnet**, daß die mindestens zwei Führungsstangen (15a, 15b) parallel zur Achse des Stangenbohrers (7) und des Rohrs (8) verlaufen und an dem Ende, welches nicht mit der Mischkammer (4) verbunden ist mit einem abnehmbaren Flansch (16) zusammenwirken, der es ermöglicht, die Stangenbohrer-Rohr-Baueinheit (7, 8) benachbart zur Mischkammer (4) festzuklemmen.
5. Gips-spritzapparat nach den Ansprüchen 1 und 4, **dadurch gekennzeichnet**, daß die Stellung des Flansches (16) so ist, daß das Zusammenwirken des Stegs (11) des Mixers (5) an dem Schlitz (10), welcher an dem Kopf (9) des Stangenbohrers (7) angeformt ist, ermöglicht wird.
6. Gips-spritzapparat nach einem oder mehreren der voranstehenden Ansprüche, **dadurch gekenn-zeichnet**, daß die Entfernung des Flansches (16) und die Aktivierung des Mixers (5) es ermöglicht, den Stangenbohrer (7) bezüglich des Rohrs (8) herauszuziehen oder einzuführen, wobei das Rohr (8) in der Lage ist, längs der beiden Führungsstan-gen (15a, 15b) mittels der Profilelemente (14a, 14b), welche seine Drehung verhindert, zu gleiten.

Revendications

1. Dispositif pour la pulvérisation de plâtre servant à appliquer des plâtres prémélangés secs, compre-nant un mélangeur motorisé, qui est logé à l'inté-rieur d'une chambre pour réaliser un mélange avec de l'eau et entraîne des moyens de pompage du mélange, qui sont constitués par un dispositif (7,8) à tube et vis auger, caractérisé en ce qu'il com-prend une mâchoire (12) pour bloquer temporairement ledit ensemble à tube et vis auger (7,8), ladite mâchoire (12) étant associée avec possibilité de glissement à des moyens fixes de guidage (15a,15b) et coopérant avec une bride amovible de blocage (16).
2. Dispositif de pulvérisation selon la revendication 1,

caractérisé en ce qu'il comprend une vis auger (7),
 qui possède une tête (9) dans laquelle est formée
 une fente adaptée (10), une nervure de forme com-
 plémentaire (11), qui fait saillie au-dessous dudit
 mélangeur (5) et peut être disposée au niveau de
 ladite fente (10), ledit ensemble constitué par ladite
 vis auger (7) et ledit tube (8) pouvant être bloqué
 temporairement dans une mâchoire adaptée (12),
 qui peut être serrée à l'aide d'un seul boulon (13),
 deux couples d'éléments profilés en forme de C
 (14a,14b) faisant saillie radialement par rapport à
 ladite mâchoire (12) le long d'un plan diamétral et
 constituant des moyens qui permettent à ladite
 mâchoire (12) de glisser par rapport auxdits
 moyens fixes de guidage (15a,15b).

3. Dispositif de pulvérisation selon les revendications
 1 et 2, caractérise en ce que lesdits moyens fixes
 de guidage sont constitués par au moins deux
 tirants (15a,15b) qui sont associés de façon amovi-
 ble, à une extrémité, au-dessous de ladite chambre
 de mélange (4).
4. Dispositif de pulvérisation selon l'une des revendi-
 cations 1 et 3, caractérisé en ce que lesdits au
 moins deux tirants (15a,15b) sont parallèles à l'axe
 de ladite vis auger (7) et dudit tube (8) et coopèrent,
 au niveau de l'extrémité qui n'est pas raccordée à
 ladite chambre de mélange (4), avec une bride
 amovible (16) qui permet de bloquer ledit ensemble
 à vis auger et tube (7,8) du voisinage de ladite
 chambre de mélange (4).
5. Dispositif de pulvérisation selon les revendications
 1 à 4, caractérisé en ce que la position de ladite
 bride (16) est telle qu'elle permet l'interaction de
 ladite nervure (11) dudit mélangeur (5) au niveau
 de ladite fente (10) formée dans ladite tête (9) de
 ladite vis auger (7).
6. Dispositif de pulvérisation selon une ou plusieurs
 des revendications précédentes, caractérisé en ce
 que la suppression de ladite bride (16) et l'activa-
 tion dudit mélangeur (5) permettent d'extraire ou
 d'insérer ladite vis auger (7) par rapport audit tube
 (8), ledit tube (8) étant à même de glisser le long
 dudit couple de tirants (15a,15b) du moyen desdits
 éléments profilés (14a,14b) qui empêchent sa rota-
 tion.

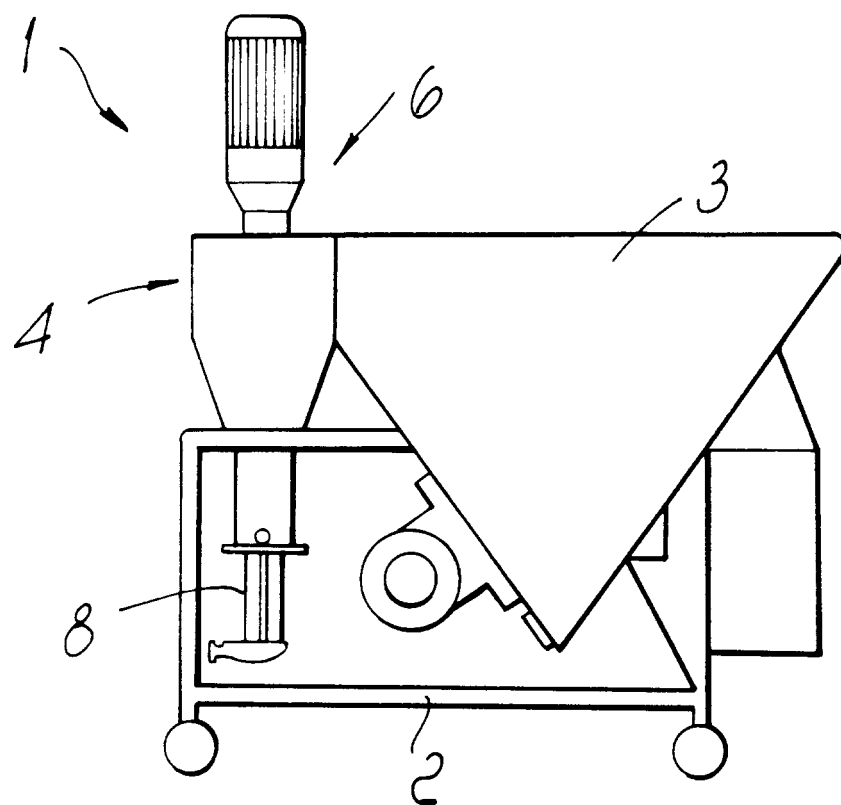


Fig. 1

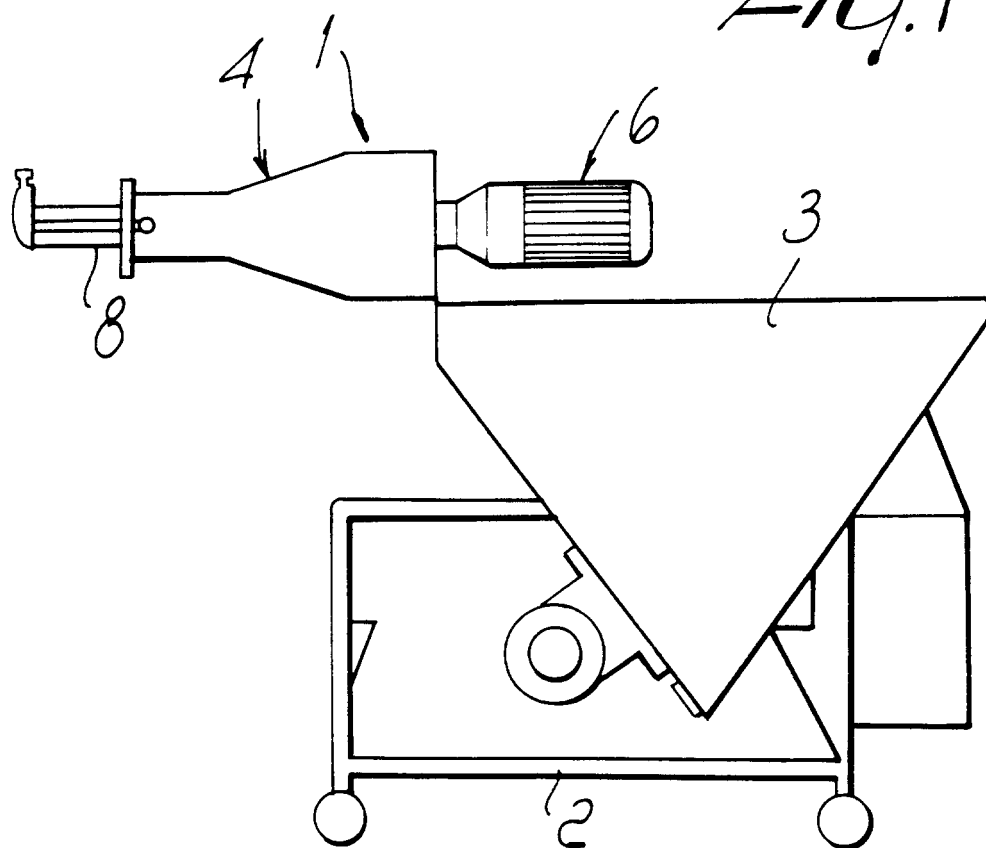


Fig. 2

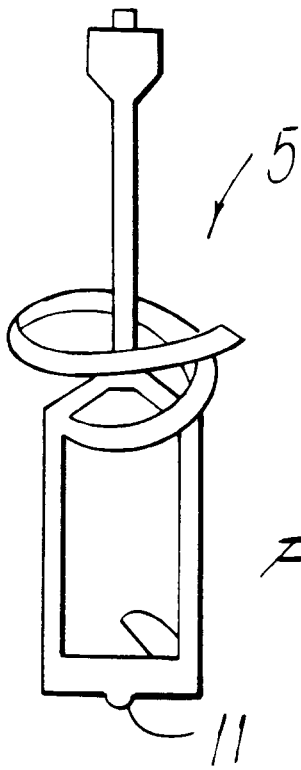


Fig. 3

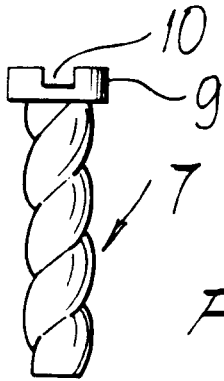


Fig. 4

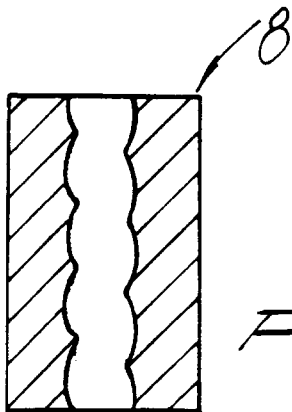


Fig. 5

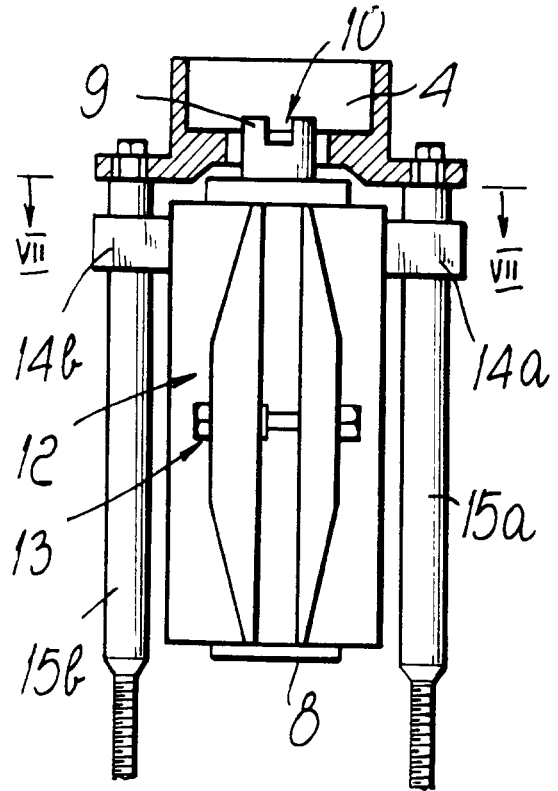


Fig. 6

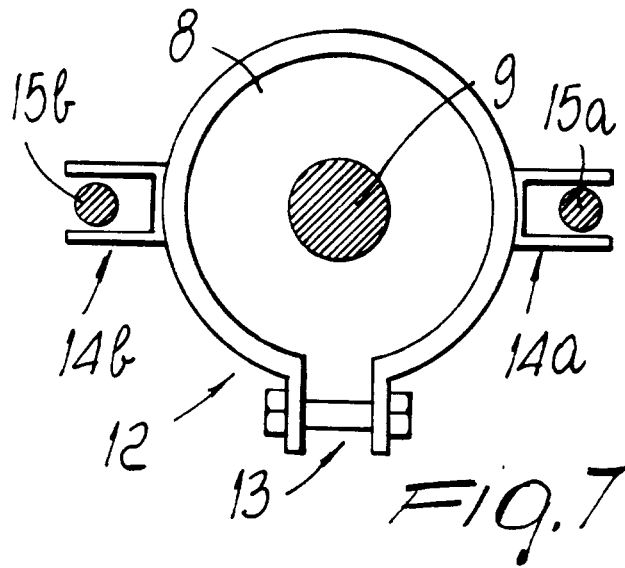


Fig. 7

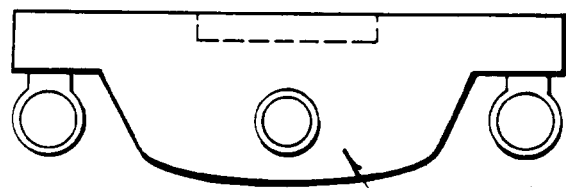


Fig. 8

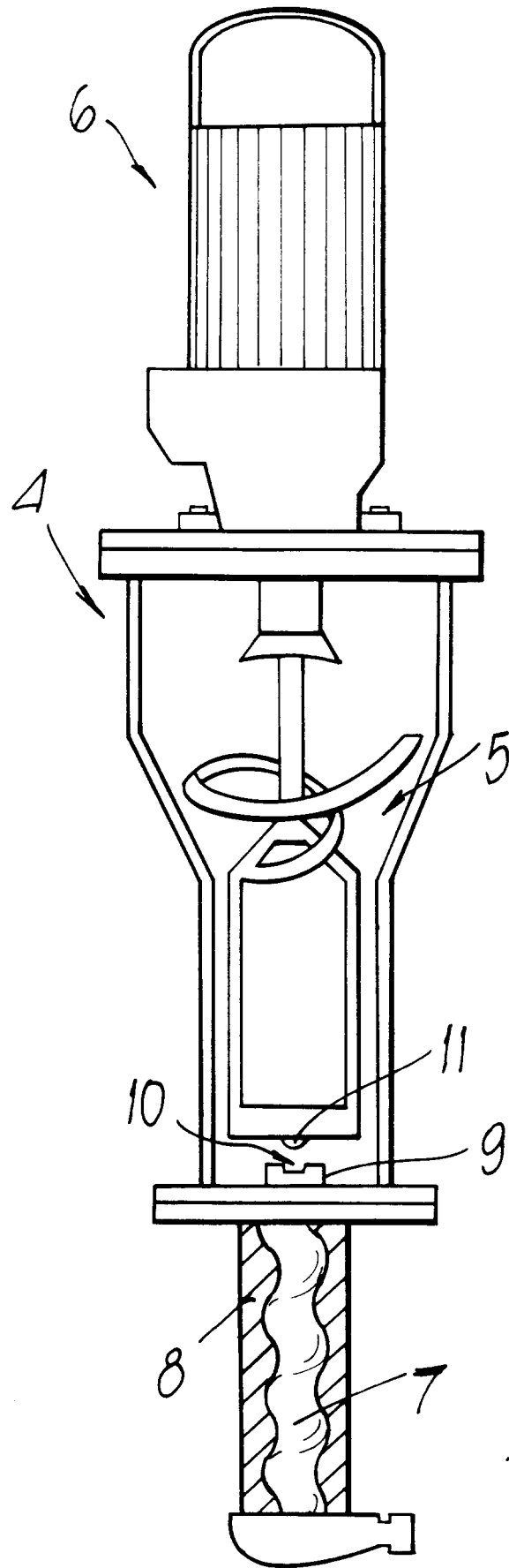


Fig. 9